

WHAT IS CLAIMED IS:

1. A lubricated sliding system comprising:
a base member having a smooth and hard first friction surface; and
a counter member having an elastic friction surface and including hard materials at least partially projecting from the elastic friction surface, wherein the elastic friction surface forms a plurality of lubricant-receiving recesses having side surfaces formed by the hard materials, the recesses being reversibly compressible under an application of pressure.
2. The lubricated sliding system as recited in claim 1, wherein the plurality of recesses are not interconnected.
3. The lubricated sliding system as recited in claim 1, wherein at least some of the recesses are interconnected through small interconnecting areas.
4. The lubricated sliding system as recited in claim 1, further comprising a lubricant and wherein a compressibility of the elastic friction surface is higher than a compressibility of the lubricant.
5. The lubricated sliding system as recited in claim 1, wherein the elastic friction surface includes at least one of a plastic and an elastomer.
6. The lubricated sliding system as recited in claim 5, wherein the hard material particles are at least partially covered by a thin layer of the plastic or elastomer.
7. The lubricated sliding system as recited in claim 5, wherein the plastic includes at least one of a fluorinated hydrocarbon, a perfluorinated hydrocarbon, a polyolefine, and a silicone.

8. The lubricated sliding system as recited in claim 1, wherein each of the recesses in the friction surface have a diameter ranging from 0.1 μm to 5 mm.
9. The lubricated sliding system as recited in claim 1, wherein the recesses have a depth-to-diameter ratio of 0.01 to 10.
10. The lubricated sliding system as recited in claim 1, wherein a volume of the recesses varies in size.
11. The lubricated sliding system as recited in claim 1, wherein the counter member includes a base material and a depth of the recesses extends to the base material.
12. The lubricated sliding system as recited in claim 1, wherein the hard materials are formed by particles including at least one of SiC, TiC, WC, ZrO₂, Al₂O₃.
13. The lubricated sliding system as recited in claim 1, wherein the materials are formed by particles including an alloys of at least one of the elements Mo, W, Cu, Pb, and Sn.
14. The lubricated sliding system as recited in claim 1, wherein the first friction surface is metallic.
15. The lubricated sliding system as recited in claim 1, wherein the lubricating sliding system is part of one of a shock absorber, a steering system, and a brake system of a vehicle.
16. The lubricated sliding system as recited in claim 1, wherein the lubricating sliding system is part of at least one of a shaft bearing and a piston guides of a drive system in a motor vehicle.